CORRESPONDENCE.—* * "I was much interested in your note on the Correspondence of Material Forms with Mathematical Relations, published in the ANALYST of last September. It gives a mathematical expression to a theory of the constitution of matter that I have long held, and seems to be a necessary corollary from the doctrine of the infinity of space.

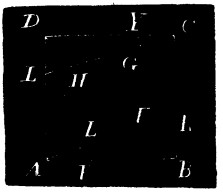
"Conceive the smallest atom known to Chemists, this may be, and probably is, composed of suns at immense distances from each other, when compared with their own size; these suns are probably surrounded by planets, on these planets organized beings with all the phenomena of civilizations may be conceived to exist, and what would be known as matter to these beings might, in turn, have its atoms composed in a similar manner, and so on in an infinite series downward. On the other hand, all the star clusters and distant nebulæ known to astronomers may make up but an atom, in a portion of organic, or inorganic, matter belonging to a system of a higher order. Pursuing this line of thought we might go on in an infinite series upward. The subject opens up a vast field for speculation, and will, I think, in the future, more and more engage the attention of science and philosophy."

[The foregoing extract is from a letter by J. M. Arnold, of Boston, Mass., dated Jan. 17, 1879, and, in a subsequent letter, he refers to ex-Pres. Hill, of Harvard University, Prof. De Morgan, and others, as entertaining similar views, of the constitution of matter, to those expressed above.

The very interesting paper read by J. Norman Lockyer, and published in the American Journal of Science and Arts for Feb., 1879, has, it seems to us, an important bearing on this subject.—Ed.]

NOTE, BY PROF. M. L. COMSTOCK, GALESBURG, ILL.—In Runkle's Math. Monthly, Vol. II, page 45, there is given a collection of demonstrations of the 47th Prop. of the first Book of Euclid, 28 in all. I append two, which I take to be original.

Let AFB be the right angled triangle, $ACBD$ a sq're described on AB; then, from similar triangles, the following relations will appear.



1. $AB^2 = 4AEP + 4EFBP + EF^2$
$= 2AE.EP + 2EF(EP + BF) + EF^2$
$= 2AE.EP + 2EF.EP + 2EF.BF + EF^2$
$= 2AF.FR + 2EF.BF + EF^2$, since $EP = FR$,
$= 2BF^2 + 2EF.BF + EF^2$
$= BF^2 + AE^2 + 2EF.AE + EF^2$, since $BF = AE$,
$= BF^2 + (AE + EF)^2 = BF^2 + AF^2$.